

WHAT IS CLAIMED IS:

1. A dual mode cooling system for an information handling system comprising:
 - a heat exchanger for receiving heat generated by the
 - 5 information handling system;
 - a condenser in communication with the heat exchanger such that the heat received at the heat exchanger is transferred to the condenser; and
 - the heat exchanger and the condenser able to
 - 10 selectively operate in an active cooling mode and a passive cooling mode.

2. The dual mode cooling system of Claim 1, further comprising:
 - 15 a power management control coupled to the information handling system; and
 - the power management control operable to monitor an operating condition of at least one component in the information handling system such that the power
 - 20 management control operate the heat exchanger and the condenser in either the active cooling mode or the passive cooling mode based on the operating condition of the at least one component.

3. The dual mode cooling system of Claim 2,
further comprising:

a compressor in communication with the heat
exchanger and the condenser via a refrigerant line;

5 the compressor operable to drive a refrigerant
between the heat exchanger and the condenser when
operated in the active cooling mode;

a compressor bypass valve coupled to the refrigerant
line in parallel to the compressor; and

10 the compressor bypass valve operable to permit the
refrigerant to flow freely between the heat exchanger and
the condenser without passing through the compressor when
operated in the passive cooling mode.

15 4. The dual mode cooling system of Claim 2,
further comprising:

an expansion valve assembly fluidly coupled to the
refrigerant line downstream of the condenser and upstream
of the heat exchanger;

20 an expansion bypass valve coupled to the refrigerant
line in parallel with the expansion valve assembly; and

the expansion bypass valve operable to permit the
refrigerant to flow freely between the condenser to the
heat exchanger without passing through the expansion
25 valve assembly when operated in the passive cooling mode.

5. The dual mode cooling system of Claim 2,
further comprising:

a liquid cooling line in communication with the heat
exchanger and the condenser; and

5 a liquid refrigerant disposed in the liquid cooling
line, the liquid refrigerant operable to move between the
heat exchanger and the condenser when operated in a
passive cooling mode.

10 6. The dual mode cooling system of Claim 5,
further comprising a pump coupled to the liquid cooling
line, the pump activated via the management power control
and operable to circulate the liquid refrigerant within
the liquid cooling line.

15 7. The dual mode cooling system of Claim 5,
wherein the heat exchanger comprises a dual path heat
exchanger including a refrigerant line and the liquid
cooling line extending therethrough.

20 8. The dual mode cooling system of Claim 5,
wherein the condenser comprises a dual path condenser
including a refrigerant line and the liquid cooling line
extending therethrough.

9. An information handling system using power management controls for a dual mode cooling system, comprising:

5 a processor disposed within the information handling system, the processor operable to process information;

a dual mode cooling system including a heat exchanger and a condenser that are able to selectively operate in an active cooling mode and a passive cooling mode;

10 the heat exchanger thermally coupled to the processor, the heat exchanger including a refrigerant line extending therethrough;

the heat exchanger operable to transfer heat generated by the processor to a refrigerant flowing in
15 the refrigerant line;

the condenser in communication with the heat exchanger such that the refrigerant is able to flow to the condenser wherein the heat transferred to the refrigerant is expelled at the condenser; and

20 a power management control coupled to the information handling system, the power management control operable to selectively activate the passive cooling mode and the active cooling mode of the dual mode cooling system.

10. The information handling system of Claim 9,
further comprising:

a compressor coupled to the refrigerant line, the
compressor operable to drive the refrigerant between the
5 heat exchanger and the condenser when operated in the
active cooling mode;

a compressor bypass valve coupled to the refrigerant
line in parallel to the compressor; and

the compressor bypass valve operable to permit the
10 refrigerant to flow through the refrigerant line without
passing through the compressor when operated in the
passive cooling mode.

11. The information handling system of Claim 9,
15 further comprising:

an expansion valve assembly coupled to the
refrigerant line, the expansion valve assembly operable
to interact with the refrigerant when operated in the
active mode;

20 an expansion bypass valve coupled to the refrigerant
line in parallel with the expansion valve assembly; and

the expansion bypass valve operable to permit the
first refrigerant to flow through the first refrigerant
line without passing through the expansion valve assembly
25 when operated in the passive cooling mode.

12. The information handling system of Claim 9,
further comprising:

a liquid loop cooling line fluidly isolated from the
refrigerant line, the liquid loop cooling line coupled to
5 the heat exchanger and the condenser;

a liquid refrigerant disposed within the liquid loop
cooling line; and

a pump fluidly coupled to the liquid loop cooling
line, the pump operable to drive the liquid refrigerant
10 between heat exchanger and condenser when operated in a
passive cooling mode.

13. A method for cooling an information handling system using a dual mode cooling system, comprising:

receiving heat generated by at least one component in an information handling system at a heat exchanger;

5 transferring the heat to a condenser such that the condenser expels the heat from the information handling system;

monitoring an operating condition of the information handling system with a power management control; and

10 based on the operating condition, automatically operating the heat exchanger and condenser in either a passive cooling mode or an active cooling mode.

14. The method of Claim 13, wherein the operating
15 condition of the information handling system comprises a temperature of the at least one component in the information handling system.

15. The method of Claim 13, wherein the operating
20 condition of the information handling system comprises a low power state of the information handling system such that the information handling system operates in a reduced power condition.

25 16. The method of Claim 13, wherein the operating condition of the information handling system comprises a failure of operating the heat exchanger and condenser in the active cooling mode.

17. The method of Claim 13, wherein operating the heat exchanger and the condenser in the passive cooling mode further comprising activating a compressor bypass valve such that a refrigerant circulates between the heat
5 exchanger and the condenser without passing through a compressor.

18. The method of Claim 13, wherein operating the heat exchanger and the condenser in the passive cooling
10 mode further comprising activating an expansion bypass valve such that the refrigerant circulates between the heat exchanger and the condenser without passing through an expansion valve assembly.

15 19. The method of Claim 18, wherein operating the heat exchanger and the condenser in the passive cooling mode further comprising circulating a liquid refrigerant in a liquid loop cooling line such that the liquid loop cooling line and the refrigerant line are fluidly
20 isolated.

20. The method of Claim 19, further comprising pumping the liquid refrigerant through the liquid loop cooling line between heat exchanger and condenser when
25 operated in a passive cooling mode.